

THE
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THE FEELING PROBLEM IN RECENT PSYCHOLOGICAL
CONTROVERSIES.

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The most recent discussions of feeling indicate that interest in Wundt's latest theory is not so acute. All of the speculations on this vital psychological subject reported in my too brief summary here take their departure in some way from James' original position. In French work particularly this James-Lange theory remains still the basis for interesting experimentation as well as constructive theorizing. For good reasons, not always clearly recognized by some prominent American and English psychologists, the James position should be characterized as a peripheral theory of feeling. A theory which makes no clear distinction between the affective life and the cognitive content of experience contributed from the various avenues of sense organs, including the more internal organic and kinesthetic material, is open to many objections. A more or less clear recognition of this is evident in all current literature on the subject. As few accept this well-known theory unreservedly nowadays, it seems profitable to review the fairly distinguishable tendencies now foremost in the field. I have elsewhere¹ attempted to suggest certain justifiable criticisms of the conceptions underlying German experimentation and theorizing, and other work whose origin and method may be traced to this general point of view. The fundamental and critical issue comes out more clearly in what I propose to discuss in the present article.

To refuse to accept the James theory one must resort either to some very precarious attempts to modify it, thus tending inevitably to

¹*Jour. of Philos., Psychol. and Sci. Methods*, Vol. II., No. 4; Vol. II., No. 10; Vol. IV., No. 7; Vol. IV., No. 8; *PSYCHOLOGICAL BULLETIN*, Vol. II., No. 5.

obscure the crucial objection to the conception of mental life which underlies it; or one must substitute for it some variety of 'central' theory, laying himself open to the charge of resorting to 'spiritualistic' explanations. Every modern writer, it seems to me, may be classed as a representative of one or the other of these tendencies. Sollier,¹ conceiving all 'physiological activities as essentially identical with physical or chemical processes, and further, that these molecular nervous changes are concomitant with mental processes, concludes from considerations questionable for any theory, that the peculiar molecular action of the cerebrum itself, independently of the functioning of sense organs and of the additional kinesthetic material, is the exclusive seat of the emotions. He desires some theory that may, by exclusive structural reference, account for the distinguishing attitude-taking aspect of emotional experience, as contrasted with the over-worked sensationalistic or intellectualistic element of consciousness. He lays himself open to the ready criticism of being 'voluntaristic' in attitude, and 'spiritualistic' in explanation.

Th. Ribot,² in his latest published work, though devoting a whole interesting book to the discussion of one species of feeling, the passions, is vague as to his suggested physiological explanation. He does however put himself on record as opposed to the James explanation. He says rather guardedly that every emotional possession most likely indicates the existence of a peculiar and unique 'aggregate of psychic units,' and has necessarily a 'physical and cerebral substratum'; 'a localization and an active coördination center whose synthetic unity is the feeling.' He very likely has in mind and employs purposely the conception of 'psychic center' in the sense more explicitly expounded by d'Allonnes, whose point of view will be taken up later. His use of the 'serial function of psychic centers,' and 'continuity of central excitement,' suggests a theoretic construction something like Wundt's Apperception Center. He may be tentatively classed therefore with those opposing James in favor of a more central theory, with those moreover who do not feel that it is profitable to attempt to re-adapt or modify any peripheral theory.

In the two latest issues of the *Journal de Psychologie normale et pathologique*, in a controversy between G. R. d'Allonnes³ and H. Piéron,⁴ we have the tendencies clearly and interestingly indicated.

¹ *Le mécanisme des émotions*, Paris, 1905.

² *Essai sur les passions*, Paris, 1907.

³ G. R. d'Allonnes, 'Explication physiologique de l'émotion,' II., *Jr. de Psych.*, mars-avril, 1906, pp. 137-144, et *Ibid.*, nov.-déc., 1907, pp. 517-524.

⁴ H. Piéron, 'Théorie des émotions et les données actuelles de la physiologie,' *Ibid.*, sept.-oct., 1907, pp. 439-451.

H. Piéron observes that very early in the history of research and controversy relating to the role of circulatory phenomena in matters of psychological interest, a high degree of technical perfection was reached, and admirable results obtained. François-Franck¹ has very well shown how naturally it comes about that the brain, in all its very delicate action even, is but the servant of the massive changes produced by the general circulation. From this natural starting-point it obviously comes to be conceived as the passive organ registering without resistance the variations of arterial pressure. Plentifully supplied with blood, motor manifestations are numerous and vigorous; despoiled of this, diminution of activity occurs and depressive manifestations result. Personality has no meaning, hence, for this kind of physiological psychology. To Mosso is due the introduction of this conception. François-Franck claims for the brain, however, an independent circulation. The general vascular changes cannot bring about a condition in the brain, if it itself is a prime cause of these vascular changes. Brain circulation is extremely rapid, circulatory variations comparatively slow. Consequently, cerebral vascular variation in turn precedes the peripheral process. This is the normal order of the phenomena. Great disturbances of the general circulation, however, do not of course occur without affecting cerebral circulation. In the typical emotional (?) process, says Piéron, the central changes precede the peripheral, and are not conditioned by the latter. William James relies upon a metaphysical (?) rather than a physiological explanation. Emotion is not, as James' theory implies, a fusion of a cœnesthetic complex and an intellectual element, which together in turn form a nucleus to which continually peripheral contributions add themselves. Emotion must be something other than a cœnesthetic state.

Pagano² has battered down this conception in some neatly performed experiments. Dogs, in a normal state otherwise, hence supplementing Sherrington's well-known experiments, were placed on a vivisection table and trephined at a point corresponding to the 'sillon post-croisé.' With a very fine needle curare was injected. Excitation of the anterior part produced 'emotional phenomena which are characteristic of fear.' In the 'syndrome' phenomena not characteristic of emotion were caused by the same stimulus. Posterior excitation

¹Ch. A. François-Franck, *Cours du Collège de France et Travaux du Laboratoire*, pp. 46-58.

²G. Pagano, 'Li funzioni del nucleo caudato,' *Rivista di Patologia nervosa e mentale*, 1906, XI., 289-319, and 'Les fonctions du noyau caudé,' *Archives ital. de Biol.*, 1906, I., 46, fasc. 3.

called forth phenomena clearly indicative of the presence of the emotional state of anger, such as snarling, tendency to bite, etc. Of these normal animals, hence, not under the influence of narcotics or anesthetics, one, which had received the injection external to the median portion of this 'noyau caudé,' just after the injection grins, shows fury, bites the objects with which he is menaced and reacts with unmistakable (?) anger to the whole provoking situation. Another, whose injection was given in a different part of the brain, the top part of the median portion of the noyau caudé shows genuine anxiety, is terrorized by acoustical and visual stimuli, trembles, and shakes its limbs. These reactions are constant when the injections touch these specified regions; not otherwise. Intense emotions are hence possibly connected with localized central excitements. It is impossible yet on evidence to say that emotions correspond to distinct cerebral activities. It is, however, also impossible to say that they are mental products determined as to their qualitative nature by sensory or cognitive factors previously engendered by the stimuli in question, circulatory or otherwise. This possible hypothesis should, however, serve to cool the excessive ardor of those attached to peripheral theories, Piéron urges. Sherrington's experiments, too, despite the supposed refutation by James and others, gain significance if one admit the above as a possible hypothesis. These results are crucial in a way, and make it easier to think that emotions can be maintained independently of the support of peripheral contributions.

G. R. d'Allonnes,¹ relying on Bechterew,² has made claims similar to James' rejoinder to his critics, that the so-called emotional reactions might be purely automatic reflexes, citing that the excitement of the thalamus was sufficient to effect this motor reaction. The reactions of Pagano's dogs should correct such a misunderstanding of the function of the thalamus, thinks Piéron. The direct excitation of the thalamus will provoke the characteristic reactions. This is necessary, but not sufficient, to stimulate determined emotional reactions. The origin of the complete emotional reaction is demonstrably more central, where one should naturally (?) expect to find the real seat of emotion. It is begging the question to deny to Sherrington's or to Pagano's dogs the emotional experience and to refuse to attach to subcortical centers any psychical function, and at the same time to demand *a priori* for the cortex the exclusive seat of consciousness. Bechterew's animals, deprived of cortex, exhibit emotional reactions. Pa-

¹ *Op. cit.*, p. 138.

² *Les voies de conduction du cerveau et de la moelle*, 1900.

gano's experiments indicate that the seat of emotions is in the corpus striatum. This striated body, though near the thalamus, is very different embryologically, according to Van Gehuchten. Genetically it has a dignity, of function possibly, far higher than the thalamus, and almost equal to that of the cortex. Also fishes possess the striated body but not the cortex. They likewise seem to be characteristically emotional (fearful). Parallel functions might also be so localized in man. Hence, in the present state of neurological knowledge, a subcortical seat of the emotions is not *a priori* an untenable physiological theory.

A still further evidence of the existence of a genuine emotion is that the expression varied with the circumstance under which the stimulus was given. An additional favorable consideration is that it is just as reasonable for an emotion to exist under the above experimental conditions, as it is for ordinary emotional experiences to eventuate and in turn to disappear in normal life, sometimes coexisting with automatic responses, sometimes not being consciously present. In short, if we agree with H. Piéron, we can argue from these canine experiences similar ones for man just as we do as to what may be similar in intellectual functionings.

M. d'Allonnes, so claims his critic and opponent, has modified or rather inversed the James theory, by claiming that these mimic reactions do not participate by contributing *content* for emotions, but are only the expression of the emotions.¹ Neither of these makeshifts is necessary if we incline to find for emotions proper the subcortical seat above referred to. Piéron's is hence a physiological theory, but at the same time a central theory. This enables us to distinguish emotion from the simple sensory resultant of a cœnesthetic complex, as indeed introspection demands. At the same time it has the advantage of allowing for the distinct rôle of the emotions as well as of the intellect in mental life. Thus more simply and more coherently can we explain physiologically how the particular cerebral activity here concerned can influence and be influenced by cerebral excitements connected locally with sensory and more purely intellectual activities. Piéron deprecates the general tendency of the followers of James and Lange to call all theories of the central origin of the emotions spiritualistic speculation.

To this article d'Allonnes replies in the next and most recent issue of the same journal.² He thinks the views above set forth briefly are

¹ Similar attempts at thus modifying the peripheral theory will be reported later in this discussion.

² *Op. cit.*

wrongly founded upon a false underlying conception. He calls attention to the fact that Vulpian¹ contended that the Pons varolii was the central seat for elementary feelings, and Bechterew and Pagano that the seat should be in the optic lobe and in the striated body respectively. Further, Höffding² cites the case of a rat, deprived of both hemispheres and of the optic lobes, that exhibited fear when the mewling of a cat was imitated in its hearing.

M. d'Allonnes repeats almost the words of James that we can be sure only of the fact that the mimic automatism is preserved, not the psychic concomitant. M. Piéron's general conception of psychic centers is for his critic likewise inadmissible. The only legitimate conclusion from Pagano's interesting researches is that the particular subcortical area stimulated with curare was simply a section of the nervous circumlocution in action in anger or fear, and that this particular region of the head is merely an important crossway junction of mimic (?) emotional paths. This inference as to the function of the noyau caudé, to which M. Piéron attaches so much importance as the central stage and point of termination of central action where emotional states are in question, is not justifiable, even with his vague general conception of psychic centers. Piéron's inferences from Pagano's experiments hence are not legitimate. They merely indicate that, concurrently with this specialized excitement, a number of other centers participate. Likely it and many other areas are necessary conditions for emotional states. Of itself, the activity of no one center in all likelihood can suffice. The participation of this area in bringing about the physiological situation for emotional consciousness has long been known. This, however, is no justification for such an unqualified assumption. This is a far different thing, of course, from the assertion that this limited area, independently of the cortex and in the absence of the viscerosensory nerve contributions, can function adequately and isolatedly. In Pagano's experiments the cerebral lobes were not removed nor were the centripetal nerves cut. According to the critic, Piéron fails to realize that modern French neurology excludes psychic centers from physiology altogether, substituting for such a conception that of 'psychic functional cycles.' Affection, just as other psychic operations, presupposes a psychic functioning of vastly complex systems of multiple centers. In Piéron's sense there are no visual nor auditory centers even. Only, hence, by a false conception of psychic centers can he draw support from Pagano's important researches.

¹ Vulpian, *Physiologie du système nerveux*, 1886, pp. 5-49.

² Höffding, *Outlines of Psychology*.

Likewise as to Sherrington's much discussed experiments, the critic thinks that Piéron has failed to understand the most serviceable contemporary psychological concepts of emotion and elementary affection. His (Piéron's) conclusions, hence, are not significant here. Piéron thinks that d'Allonnes has tended to explain away all purely emotional phenomena as complexes simply of sensations and intellectual elements; in short, of somatic impressions. This is clearly what so many critics have objected to in the James theory, however skilfully its adherents have sought to adjust it to the new considerations offered.

M. d'Allonnes' conclusions are interesting: "We conclude this discussion with the statement that unemotional feelings exist (Wundt's affective elements); that the absence of affective states does not prevent the conservation, the systematization, the active power of representations (images); that without the intervention of emotions the ideas and the acts can organize themselves stably in inclinations and in passions capable of influencing efficaciously one's conduct; that representative phenomena and active habits, and likewise emotions, are psycho-physiological forces, and are able, without recourse to reinforcement by affective factors, to constitute themselves solid complexes and to indicate their existence in automatic and reflex manifestations."

This very recent, highly and perhaps unwarrantably speculative controversy is, it seems to the writer, valuable. It clearly indicates the still chaotic state of the whole psychological as well as the physiological problem. It is refreshing too to see that here little use is made of Wundt's over-classified tridimensional conceptions. Experimentation solely with a view to add some little doubtful evidence for or against a theory somewhat arbitrarily adopted by most German and many American experimentalists, has not as yet tended mightily to clarify our conceptions, nor to stimulate further steps in formulating a more serviceable hypothesis.

The efforts at explanation above reported and the different conceptions with which the authors crudely work and somewhat dogmatically seek to controvert each other, offer an inviting opportunity for adverse criticism. Neither of them seeks, however, as one suspects of other writers not to be mentioned here, to veil in pseudo-profound terminology what they contend for. Both, too, can be easily understood to be honestly grappling with a real problem, and a current one. Piéron *knows* surely that the affective aspect of experience should not be confused with 'somatic impressions,' sensational or cognitive content. This is certainly a psychological objection to any peripheral

theory, and hence to the James theory. He is, however, so determined to justify his conviction by proof that he taxes the reader's reserve of sympathy with his genuine purpose. Feelings, however Wundt or anyone else may claim for them independent elemental constitution in the composition of experience, are, on the other hand, made just as unreal when one ascribes to them absolute, isolated, independent existence and function. Piéron is dangerously near the plane of Descartes when the latter formulated his theory of the preposterous function of the pineal body.

The exposition furnished by d'Allonnes of the serial character of vast central systems harmoniously functioning, and his conception of psychic centers in general, sound more modern and more plausible. He does, however, as quoted from his summary above, unmistakably tend to isolate aspects of experience in such a way as to throw all in a false light. It is novel psychology, for example, to be told, with such decision and assurance, that intellectual or moral states, with no affective factor, can efficiently (or otherwise) influence conduct. This is almost a return to platonic psychology. Ribot's discussion of the rôle of feeling in all imaginative processes, and his recent *Essai sur les Passions* have evidently not been deemed worthy of very careful consideration by the writers above cited.

It is clear to all students of the psychology of feeling that the following desideratum remains a genuine one, viz.: how shall one conceive the relation of feeling or affection to sensation? The original James theory is still important just because it states clearly an attitude toward this question. Carried out logically it identifies the two. James nowhere in his psychology, so far as I can find, recognizes that there are two elemental constituents of mental life. Hence, emotional states represent no especially troublesome variety of mental stuff. Both Wundt and Titchener, differing in many respects, do agree to work with the distinguishing concepts of sensational and affective elements. The so-called functional psychologists cover somehow their conceptual groundwork so completely that one can with difficulty understand just what distinctive functions they do ascribe to what the old classifications chose to call ideation, feeling, and willing. It is easy to follow Münsterberg and declare that only sensation complexes constitute psychological material. It is not so easy for such followers to refute Baldwin when he calls such procedure 'barren of results.'

It would not be difficult to show still that almost all psychologists are extremely reluctant to grapple with that vital part of every experience which we call, with sufficient clearness to be understood, *feeling*.

Münsterberg's attitude is perfectly clear and as inexorable — and also equally hopeless, to my mind, if we are to deal in psychology with the affective aspect at all. He says, "Ideas and their elements alone can thus find a logically satisfactory description in psychology * * * . An emotion or a volition is never an idea but their elements may be the same * * * "; that is, emotions are for psychology only sensation complexes. He continues: "Our goal is, therefore, to replace the real emotions — etc., by complexes and sensations."¹ Höffding, in his address at the World's Congress of Arts and Sciences, will admit no necessity for this 'false transformation' of actual experience, which it is the business of psychology to describe as best it can. Münsterberg, because 'the emotions link themselves with physical causes or effects, and everything in respect to them is dependent upon doubtful observations and interpretations,' feels driven by logical necessity to transform them into 'ideas and their elements.' It should be noted that he consciously chooses to refrain from dealing with them directly. In the light of his whole conception, clearly, all of the efforts above and elsewhere reported are hopeless skirmishes into a forbidden and impenetrable field. This position would seem to justify one in considering Münsterberg a supporter of the James theory in so far as to agree that all emotions must be explained by sense contributions, peripheral or otherwise.

Another related point of view is interesting in this connection. W. McDougall desires to make use of the James theory modified in one important respect. He attempts to reconcile it as a peripheral theory with urgent claims which seem to him to have a certain justification as suggesting a 'central theory.' He says, "If this theory is modified by the recognition of the possibility of emotions depending upon revived or reproduced organic sensations, without the actual visceral changes, it would seem to fit all the facts."² This is a laudable modification apparently, but one fails to understand how McDougall has taken into account here, as he partially promised in an earlier part of his excellent discussion to do, the task of showing just what he means by emotion or feeling or affection, aside from the 'reproduced organic' sensation material whose existence he so carefully prepares ground for. Is there anything else? Mr. McDougall on the next page resorts to philosophizing, and the fundamental psychological query is not again broached.

Judd's³ is perhaps the latest attempt to restate this problem, or

¹ *Psychology and Life*, pp. 50-51.

² *Physiological Psychology*, p. 114.

³ *Psychology*, 1907, Chap. VII.

rather to explain it away. Sensations and ideas constitute the *content* of mental life. Feelings are not content, but mental attitudes. This sounds plausible till one begins to ask what one means by content of mental life. Judd dismisses without discussing, hence the perplexity the above writers have exhibited as to whether any peripheral contributions (the main thesis of the James-Lange theory) either condition or constitute the affective aspect of experience. His position seems, however, open to question as it stands. Judd says (p. 196) 'that feeling in its relation to bodily activity always reflects (?) the harmony or lack of harmony of active tendencies.' 'Pleasurable feeling is due (?) to coöperation of motor tendencies.' 'Disagreeable feeling is due (?) to a conflict of motor tendencies,' etc. True observations all will admit, but hardly a solution or a justifiable dismissal of the real problem. '*Feeling reflects*' active tendencies, or is 'due' to disruption of motor organization, etc., may mean that it is constituted by sensations which such a situation calls forth. It may mean that feeling is an isolated passive spectator, as it were. Or still again, the term 'attitude,' used for it so often, suggests that it may mean some active principle which controls the motor outgo to muscles. The problem in relation to the crucial controversies above and elsewhere reported is not made clear by Judd. The distinction between content and attitude does not successfully set aside the genuine obstacles which the authors above cited are attacking; at least it does not do so for those who think that our feeling life is no less vital and no less ephemeral too, necessarily, than the so-called ideational. "I have aimed," says this author in his preface, "to make as clear as possible the significance of ideation as a unique and final stage of evolution." He must approximate success naturally then, by excluding from this unique and ideal function and goal any but cognitive aspects of experience. Feelings must be excluded from content, and consistently they are for him. This sounds like a Platonic goal. If Royce's term for feeling, 'our present sensitiveness to the value of things' be not a misnomer, this distinction of Judd's, though tempting for many reasons it is to adopt it, seeing particularly how skilfully its author amplifies and illustrates it, might end by falsifying the very experience we seek to clarify. The term *content* savors of something one might find by introspection — and we are surely aware of feelings introspectively; and the term *attitude* smacks of Spencerian external description of physical acts only. This may be, however, a misunderstanding, or an unfair and apparently capricious construction. There is, however, no suggestion of any qualitative distinction of the affective and the cognitive phases of ex-

perience in this discussion. Feelings happen concurrently with bodily attitudes, but so do all more purely ideational states. The psychological question is not broached by Judd, save by the exclusion of feelings from the content of experience while still making them 'reflect' or 'be due to' kinesthetic reports to the brain.

The study of these emotions reveals to Calkins 'obvious inadequacies' in existing psychological conceptions. Yet her attitude toward the problem above presented so often is not wholly clear to the present writer. She speaks of affection and sensational elements¹ as somehow distinct, and thinks that it is expedient to describe emotions in terms of 'utility' for the evolving *self*, and further that the possible 'bodily attitudes' are not 'sufficiently numerous' to enable us thereby, as Judd urges, to use them as means to describe for psychology our long list of feelings, or emotions. This is clearly a resort to what the above-cited writers would consider a question-begging procedure. To quote again from the same author: "No constant organic sensation and no distinction in temporal reference sets one (emotion) off from another." Our almost total ignorance of organic sensations, as forcibly shown by Titchener in his address at the World's Congress, might tend to show such a claim untenable. The other statement, given by the same author, that the number of possible attitudes is insufficient to square with the number of possible emotions is, I think, adequately met by Münsterberg in his elaboration of the 'Actions theorie' in his *Gründzüge der Psychologie*, and in the second chapter of *Psychology and Life*. In short, there are reasons for a new method for describing feelings, but not because of *structural* inadequacy of our anatomy.²

This fundamental question as to whether we shall rigorously distinguish sensations and feelings, or identify them, so far as our psychology is concerned, is necessary to any construction of a theory.

¹ For one of many possible references to her writings, cf. *PSYCH. REV.*, Vol. XIII, p. 78 ff.

² Calkins' latest conclusions, *Jour. of Phil.*, Vol. V., No. 5, Feb. 27, 1908, published since this article was sent to the press, are, that sensational and affective elements 'analyzed structurally,' though 'essential,' do not constitute 'an exhaustive account' of the 'concrete reality of which the idea is a mere abstraction.' According to her, psychologists should now proceed, equipped with these three fundamental, disparate elements; sensational, affective, and self factors. Her reasons assigned for the conceptual basis proposed are similar to those above mentioned, and indicate, I think, the same oversight which I have all along sought to point out; namely, the possibility that feeling fully understood and treated might go further toward exhausting our psychological account of the 'concrete reality of which the idea (sensation and image complex) is a mere abstraction.'

The vagueness on this prime conceptual issue is, more than any thing else, the cause for the controversies and for the misunderstandings one finds in all the controversies. The original James Theory, as explained by him in answer to his critics some years ago, is as clear on this point as it is, to my mind, unsatisfactory. This is why it is pivotal in so many discussions. Münsterberg's position is clear enough, but feelings as such, admittedly, do not come in for psychological treatment at all. Wundt's Tridimensional Theory seems to exhibit some tone of forced classification. Titchener's criticism, that some of his dimensions, tension and excitement for example, are names for sensational not affective aspects of experience, seems better to square with introspection, and at the same time to indicate the necessity for a psychological recognition of these two aspects. The modifications of the James theory above cited, which are typical of others also, are not clear on this fundamental issue. I have elsewhere¹ hesitatingly ventured to suggest what seems to me a possible recourse for psychologists of feeling. This method, as yet vaguely conceived I admit, is open, I am clearly aware, to many objections, though I think not to the one important one which I seem to have found in most of the authors I have read on the subject.

Psychology has erred throughout its whole history in forcing our affective life into sensational or intellectual categories, and in adapting this choice and vital experiential material to the arbitrarily chosen and pretty well perfected psychophysical methods, suitable perhaps to sense data only. Psychophysical technique and laboratory procedure in general have thus far proved inadequate in the realm of feelings. Psychoneurological specialists have put forward opinions as to almost every possible structural reference for feelings, without however having in their own minds any clear concepts of the psychological stuff they seek to explain physiologically. The other mistake to be found also throughout the history of psychology is that of conceiving feeling as abnormal, and idealizing the cognitive aspect. The epistemological conviction, at the basis of the psychologizing, if fairly and succinctly stated, of many modern psychologists, as well as of Plato, Spinoza, or Kant, would logically be that the eventuation of feeling into something cognitive in character, indicates a good personal riddance. Ribot's recent writings² mark a welcome departure from this conception that feelings are abnormal mental manifestations. To me the

¹ *Harvard Psychological Studies*, Vol. II., and *Jour. of Phil., Psychol. and Scient. Methods*, Vol. IV., No. 8.

² Ribot's 'Theory of the Passions,' *Jour. of Phil., Psychol. and Scient. Methods*. In press.

keynote of the addresses by Höffding, Ward, Titchener, Cattell, and Baldwin, at the World's Fair Congress at St. Louis, is that a reconstruction of some of our psychological concepts is called for, and that possibly our methods may be made more inclusive and exhaustive. One desideratum certainly is that someone restate what one means by that aspect of experience suggested by the words affection, feeling-tone, feeling, emotion, sentiment, or passion, in such way that systematic investigations may coöperate in accumulating considerations pertinent and contributory to a constructive theory.

Professor J. R. Angell, in the usual genial capacity of reconciling the claims and ideals of structural and functional psychologists by including all the aims and methods of both, writes¹ that "it appears equally patent that a functional psychology which lacked wholly a correlative structural psychology, would be at best but a disembodied spirit, wandering restless over an unreal world." This is apparently the opinion of all modern psychologists of feeling. Structural psychology, writes Baldwin, looking toward a psychic atomism, is doomed to extinction. We presume to remark that, if this statement be true, it is chiefly because feelings are not and cannot be transformed into sensations. The distinctive structural basis demanded, in addition to the functional explanation in terms of varieties of coordinated motor adjustments indicated by Judd and others, is not clear. It seems not at all impossible, and eminently desirable, to shelve the historically useful conception of sensation, if we cannot extend its application to all mental life without falsely transforming the matter of experience; and to formulate in its stead, taking our clue from newly adopted ions or electrons of chemistry or physics, some more serviceable and workable concept of experiential elements. Ostwald's suggestion of experience as a form of energy (shall we say highly differentiated?), though possibly harking back to Anaxagoras' *νοῦς*, as most critics will surely observe, may not in the future prove entirely barren. It is interesting to recall that Ostwald's statement, "Psychical energy is merely transformed energy, from heat, possibly, for example," followed the inconclusive arguments brought out in the symposium on feeling at the American Psychological Association two years ago. At that meeting the various positions above noted were severally sustained, though the issue above emphasized was not mentioned. There were two objections offered to the Ostwald concept: one, that it was senselessly materialistic; the other, that it made the parallelist hypothesis useless. The fundamental concept of 'impulse' is apparently

¹ *Jour. of Phil., Psychol. and Scient. Methods*, Vol. II., p. 535.

chosen by some 'functional' psychologists to replace the 'atomic' suggestion of 'sensation.' Others, following Ward, prefer as the elemental common constituent the 'feeling of activity.' Many, as well known, contend for the two elemental constituents, 'sensation' and 'affection.' These tendencies are suggestive. They indicate pretty strongly, I think, that psychology will not, and cannot profitably, follow the exclusive limited course consistently mapped out by Judd in his latest book, prophesied by him briefly on page 299 of his *Psychology*.

There remains this consideration, at any rate, before accepting Professor Judd's directions. Despite the implications of James' theory above noted, we find elsewhere¹ from this same author the following statement: "Individuality is founded in feeling; and the recesses of feeling, the darker, blinder strata of character, are the only places in the world in which we *catch real fact in the making*, and *directly perceive how events happen*, and *how work is done*. Compared with this *world of living individualized feelings*, the world of generalized objects which the intellect contemplates is without solidity or life" (italics mine). Surely psychology is vitally concerned with the 'catching of real facts in the making,' of actual experience at work. If 'functional' or 'genetic' or 'self' psychology, or Höffding's 'individual psychology,' or Ward's concept of 'activity,' serve better than 'structural' attempts yet formulated, to offer the necessary leeway and light for the psychologists of feeling, they, or it, should supplant the more stereotyped method. So far, according to the conviction of the present writer, this conceptual, epistemological if you will, groundwork has not found a universally convincing nor even tentatively acceptable statement. Eventually, I believe some such reconstruction of conceptual elements, if psychology is to parallel the advances of her sister sciences, will have to take place.

¹ *Varieties of Religious Experience*, pp. 501-502.

PSYCHOLOGICAL LITERATURE.

MUSICAL LANGUAGE.

Le langage musical et ses troubles hystériques. JOSEPH INGEGNI-
EROS, M.D., Paris, Felix Alcan. Pp. 208.

Under the subtitle of his work Dr. Ingegnieros presents the first systematic report of defects of musical language hitherto published in which hysteria is constituted the specific etiological factor.

Dr. Ingegnieros' thesis premises with Spencer's familiar biological accounting of the origin of music, which postulates the fundamental correlation of feeling and expression, the conception being a psychological inference from the basic principle of reflex activity. Accordingly music is in its origin a vocal gesture, — primarily an emotional reaction produced through reflex innervation of the muscles of phonation, and becoming in the process of development a function of increasing utility to the individual and to the species. With an increasing complexity of emotional states there is developed concomitantly a nicer facility of muscular coördinations for producing the appropriate inflexions. Thus cadence, in the expression of the emotions, is the correlate of words in the expression of ideas.

With regard to the psychophysiology of musical emotion, the interesting discussion of the subject is best summarized in the author's own words. "Music," he says, "and, in its simple form, all musical sound — determines in our organism two kinds of reactions. The first are direct, simply reflex, varying according to personal idiosyncrasy and to the general conditions of the organism at the moment of stimulation; these reactions constitute musical emotion and are comparable to those of every other emotion. The other reactions are indirect, the musical excitation acting upon the psychic representation of preceding musical emotions; its medium is the association between the sensorial memory and the memory of corresponding emotional states; musical excitation acts upon it as the spoken word upon the memory of past ideas."

In his chapter on the psychophysiology of musical emotion Dr. Ingegnieros gives the results of researches by different experimenters upon the physiological reactions responding to musical stimulation and shows that the conclusions reached have not been always in accord.

Certain facts however seem well based and Féré, whose investigations were limited to isolated sounds, got results corroborative of those obtained in experiments with complex musical combinations.

The author quotes extensively the important critical study of Vassichide and Lahy upon the question of the psychophysiology of musical emotion.

It is, however, to the indirect reactions that music owes its characteristic quality, such indirect reactions depending upon associations in memory with former emotional states, these in turn depending upon the personal predispositions, hereditary and acquired, of each individual. Thus the indirect musical emotions become intellectualized and "the difference between musical emotions and all other emotions must be sought in its psychological content, the psychological content of each individual determining his coefficient of musical intelligence.

Dr. Ingegnieros classifies the degrees of musical intelligence into five groups. There is of course no rigid partition between the contiguous members of the series, but more or less of an interlacing of their components.

I. *Musical idiocy* exists in cases in which sounds of different pitch are heard without the ability to perceive the difference or at least without comprehending in what the difference consists; where sounds are heard merely as noise, their position in the gamut being indistinguishable. The defect has been called by Ferrand tonal deafness.

II. *Musical imbecility* is a degree removed from musical idiocy in that here the subject hears musical tones, but without the feeling of their meaning. He makes no mental synthesis of the tones he hears and is therefore "musically deaf." As differentiated from tone deafness, which is perceptual, musical deafness is a psychic defect. There is sensory but not psychological audition, the subject being in a like situation to one who hears spoken an unknown idiom. As musical intelligence and therefore musical sentiment are lacking, the attempt to attain a musical education is futile beyond acquiring a certain measure of technical skill.

With group III. we reach the stage of *musical intelligence*, of which the hall-mark is "educability." The native faculty of hearing and understanding musical sounds is warrant of the ability to hear and understand more.

Groups IV. and V., comprising *talent* and *genius*, show still higher level in the development of musical aptitudes.

Turning to the clinical study of musical language we observe a precise analogy between the emotional and the ideational systems of

language, each of the centers of musical expression consisting of a specialization of the particular speech center of which it is the correlate. Notwithstanding this analogy, musical language is a distinct function of ordinary language, having "its specific images, which may be educated, modified, and dissociated independently of the homologous forms of verbal language."

In addition to the four corresponding functions in both forms of language, musical language presents a further mode of expression, with a concomitant specialization of cerebral cells forming a fifth center, that of images for instrumental execution, which has no counterpart in ordinary language, though its analogy is found in the various forms of instrumental writing, as, for example, that of type-writing. Dr. Ingegnieros claims the distinction of being the first to have described this center.

While the author does not take account of a sensory type of images, parallel to the motor type for musical execution, this memory type follows as a necessary correlate. Besides, the existence of such sensory images is shown in view of the number of players who depend upon the visual images of the position of the fingers upon the instrument or of the actual place of the keys, for their memory of the first notes of a given piece, and from the further fact that many musicians experience musical sensations as effectually, by observing the keys struck upon a silent clavier or a windless organ, as by hearing the corresponding sounds.

In a survey of the specific defects of musical language one still traces the thread of analogy, which is interwoven throughout the author's discussion of the comparison of verbal and musical language, the amusias being assimilated to the aphasias of common speech; the form of aphasia which is alone characteristic of musical language being that of instrumental amusia, due to the inability to play upon an ordinarily familiar instrument.

In his description of amusia Dr. Ingegnieros adopts the following terminology.

Amusia may be *pure* or *combined*, according as it exists independently of or in association with aphasia. It is characterized as *total*, *multiple* or *partial*, depending upon whether it involves all, several, or only one of the forms of musical language. *Complete* and *incomplete* refer to the extent of the suppression of the diseased function.

The hysterical defects of musical language are given in three groups: I. Hysterical amusia—loss or dissociation of the different

functions of musical language. II. Hysterical hypermusia — pathological exaggeration of musical expression. III. Hysterical paramusia — a morbid aberration of musical expression.

The author insists always upon the functional nature of these anomalies of musical speech and of their systematization, as characteristic of hysteria. The hypermusias and paramusias are less systematized and require no special comment. Of the six cases of hysterical amusia the most significant deserve mention.

The first is an instance of a *pure, total* amusia — a musical aphasia involving all the functions of musical speech, but only of musical speech, the functions of verbal language remaining completely intact.

Another case of interest, since it shows the absence of a parallelism in the forms affected in the two systems of language, is that of a patient who lost the ability to write the ordinary symbols of language, but was still able to write the musical ones.

A third case illustrates a dissociation of the memory form of musical language which Dr. Ingegnieros has been the first to signalize — that of a *pure* instrumental amusia, the subject's memory for the remaining forms of language, both verbal and musical, being unaffected.

The interpretation of these functional derangements of musical expression is interestingly discussed in a comparative survey of the psychological point of view of Janet and of the physiological of Sollier, from which emerges the author's synthesis of the two seemingly opposed theories, as follows: "The two fundamental theories, in so far as concerns the genesis and the nature of hysteria, are complementary, in spite of their contradictory appearance. The first is a clinical, essentially descriptive explanation of the phenomena, and the second is a physiopathological interpretation of these same phenomena."

Dr. Ingegnieros' work is rich in bibliographic citations and possesses the charm of an exceptionally facile literary style.

TRIGANT BURROW.

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FEELING.

Feeling Analysis and Experimentation. CHARLES HUGHES JOHNSTON. Journ. of Phil., Psych., and Sci. Methods, 1907, IV., 209-215.

The object of this article is to suggest certain new methods of experimentation which could profitably be employed in a future study of the affective phases of consciousness.

In past years experimenters generally have looked for an explanation of feelings in the reactions of the respiratory and circulatory systems. Drawing any conclusions from these involuntary movements is a difficult matter. Johnston believes the voluntary types of movement would lend themselves more fully to characterization and classification, and that to describe feelings one must describe bodily attitudes or incipient tendencies to adjustments which always accompany the feeling. Feelings may show themselves by different bodily modifications in different persons so that no definite localization can be made which would apply to all persons.

The author shows the difficulties which are presented in an experimental study of this problem. These may briefly be summarized as follows:

Good introspective notes are difficult. Feelings have qualitative relations to other feelings. Feelings tend to fuse into a single elemental feeling. Feelings cannot exist without the sensational elements. A brief summary of the views held in regard to feelings precedes this discussion.

In connection with this article should be noted the author's earlier published experiment in the *Harvard Psychological Studies* entitled 'Combination of Feelings.'

ROBERT D. WILLIAMS.

YALE UNIVERSITY.

Ueber Urtheilsgefühle. THEODOR LIPPS. Arch. f. d. ges. Psych., VII., 1-33.

This is one of Lipps' bits of logical deductions marked, as is usual, by fine distinctions and strict respect for his premises. The premises for the argument are that feeling arises only through checking or furthering of activities. Judgment on the other hand is an act, the goal of a completed activity, and therefore no longer open to the influence of furtherance or retardation. There can then be no feeling attached to judgment itself.

Every object must, however, be apperceived and as this process may be furthered or checked, the perception of every object gives rise to pleasure or its opposite. Similarly, we picture ourselves or others as having acted freely or as opposed in action and these remembered or possible struggles or lack of struggle give rise to pleasure. Aesthetic pleasure too is an *Einfühlung* of activity of this kind. There attaches to every judgment a feeling; but it is not inherent in the judgment itself but is connected with the uncontested presence of the idea; it is idea feeling not judgment feeling.

Granted all the assumptions, as I presume few would be willing to do, the author's conclusions seem assured.

Les caractères affectifs de la perception. DR. WAYNBAUM.
 Jour. de psych. norm. et path., IV., 289-311.

Dr. Waynbaum attempts in this article to account for the fact that perceptions arouse emotions. He finds that there are two distinct forms of emotion associated with the perceptions, the reflex and the conceptual or sympathetic. The first form arises through the reflex excitation of the emotional center in the floor of the fourth ventricle. Whenever the perceptions are new or unexpected they spread in some degree or other to this center, otherwise they go directly over the ascending paths to the cortex. The more conscious form of affectivity arises through the path that connects the cortical ideational centers with the lower emotional centers. It is this that gives rise to all symbolically aroused emotions, to sympathy and all other emotions that arise through or as the result of contemplation. Music attains most of its charm through the second connection, as is evident from the fact that enjoyment grows on repetition.

The article as a whole is a well written application of the current theory of emotion. The relatively new suggestion of the two paths corresponds fairly closely to the usual distinction between feeling and emotion, but seems difficult to apply in practice, more difficult in fact than the present distinction.

W. B. PILLSBURY.

UNIVERSITY OF MICHIGAN.

PSYCHOPHYSICS OF HEARING.

Die Beeinflussung der Sinnesfunktionen durch geringe Alkoholmengen. I. Teil: *Das Verhalten von Unterschiedsschwelle und Reizschwelle im Gebiet des Gehörssinnes.* WILHELM SPECHT.
 Archiv f. d. ges. Psychologie, 1907, IX., 180-295.

The purpose of this investigation is the scientific study of the influence of alcohol on mental processes. The difficulty of observations on this influence lies in the fact that introspection as a rule is impossible. This disadvantage is offset, however, by the possibility of using quantitative variation, by administering different doses of the drug. The subject need suffer no lasting ill effect if only a limited series of experiments is taken.

Since Exner's first publication on the effect of alcohol on mental processes, a great number of investigations have been carried on along

this line, among which those of Kraepelin and his pupils are the most important. The method employed by Kraepelin and his school was that of time measurement. This can be used in two ways, (1) by measuring the time between a signal which starts certain mental processes and a reaction movement which terminates them, or (2) by counting the number of simple acts which are performed in a certain time. The investigations carried on along these two lines show chiefly that large doses of alcohol diminish not only intellectual but also motor efficiency, whereas small quantities of alcohol diminish intellectual efficiency from the start, but quicken motor processes at first and lengthen them afterwards. Further results are that the apperceptive function is impaired, and the quality of associations disturbed. These facts exhaust approximately our present knowledge of the effect of alcohol; the proof that all intellectual functions are inhibited is still lacking.

The simplest mental processes are sensations. The effect of alcohol on the accuracy of sense perceptions may be studied by observing the threshold of difference (the smallest perceptible difference) and the threshold of sensation (the smallest perceptible stimulus). The problem is conveniently divided into two parts: (1) observations on the effect of different quantities of alcohol, (2) the temporal relations of this influence. The tests were made for the sense of hearing. The instrument used in the experiments for determining the threshold of difference was a phonometer, which was a modification of the instrument described by Wundt. The modifications had chiefly the purpose to keep constant the interval between the preparatory signal and the first stimulus and the interval between the standard and the comparison stimulus, and to ensure the absence of changes in the quality of the sounds produced. The instrument was very satisfactory. The method used by the author had the essential features of the method of irregular variation. The computation was based on the corrected numbers of relative frequency of right cases. The results of the experiments are not only given in tables which show every detail, but illustrated by diagrams which afford considerable help in understanding the author's arguments. For the student of psychophysical methods it will be interesting to notice that no use at all is made of the notion of a threshold, and that the argument is based merely on the corrected numbers of relative frequency of right cases. It is safe to say that the discussion is more convincing than if it were based on the notion of a just perceptible difference as it is usually defined.

The results for all the subjects have the same general features. The series in which no alcohol was administered show a very decided

effect of practice, which is entirely lost when the drug is taken. Not only is the influence of previous practice lost, but apparently no practice is acquired in alcohol series. The corrected numbers of relative frequency of right cases in the alcohol series are invariably below the corresponding numbers of the series without this influence. This decrease is due not so much to an increase in the number of wrong cases as to an enormous increase of equality cases. There exists, furthermore, a marked tendency to overestimate the second sound. It must be remembered that the experiments were taken at different stages of the effect of the drug and are perhaps not quite comparable. This is, however, no serious objection, since the experiments of Kraepelin have shown that the effect of somewhat larger doses of alcohol sets in very rapidly and remains at a considerable height for some time. Account was taken of this fact by beginning the experiments seven minutes after administering 40 ccm. of the drug and continuing them for 45 minutes, so that one may suppose the effect to be the same in all the experiments.

The author proceeds to study the temporal development of the influence of alcohol by the method of right and wrong cases. Experimenting with subliminal differences he found a very marked effect of practice, the relative frequency of correct judgments showing a considerable increase after a few experiments. This proves that the adaptation of the subject for a given difference of intensities is better if the same difference is presented repeatedly. The conditions of the method of right and wrong cases are, therefore, more favorable to the formation of a correct judgment than those of the method of just perceptible differences. This observation has some bearing on the problem of comparing the results of these two methods. The effect of the drug is shown by the numbers which indicate the frequency of the right cases; they are always below the corresponding number in the series without alcohol. The effect sets in soon after administering the drug (4-8 minutes) and reaches a maximum rather rapidly; the effect remains at its height for some time and then falls off gradually. There is no qualitative difference between the effect of large and of small doses of alcohol, but the effect of large doses is greater and lasts longer. There is also a marked effect on the amount of overestimation of the second stimulus which is greatest when the effect of the drug is at its height. The author concludes this part by giving some computations of the threshold of difference for which G. F. Lipps's method is used.

The second part of the paper contains the investigations on the

minimal stimulation for sensations of sound. For these experiments a phonometer of different construction was used. Determinations of the smallest perceptible intensity of sound have a certain practical interest, since they are used to find deficiencies of hearing. The author confirms previous observations on the impossibility of keeping the subject in absolute stillness, first, because it is not possible to construct a sound-proof room, and second, because of unavoidable involuntary movements which always produce some noise. As regards the size of the ball of the phonometer, he remarks that it must not be reduced beyond a certain limit, since it is difficult to give small balls an absolutely spherical form, and the slightest deviation from this produces very noticeable differences in the quality of the sound produced. An incidental observation showed the importance of avoiding even slight changes in the position of objects in the room. It is, furthermore, not a matter of indifference in which direction from the sounder the subject is posted, since the sound is reflected from the walls of the room. The intensity is greatest along the diagonal of the room.

For the determination of the smallest perceptible stimulus the method of just perceptible differences is in general use. One encounters here the same difficulty as in determining the threshold of difference by this method, namely, the inversions in the series of judgments which the subject gives; hence, the author decided again to adopt the method of irregular variation. The most striking feature of his study of the absolute threshold, however, is the use to which he puts the so-called *zero cases* (*Vexierversuche*, *Nullversuche*, control tests), which formed an essential feature of the research. It was found that the number of errors in these tests depended on the amount of intensity used in the preceding experiments; it depends, therefore, on the adaptation of the subject. The numbers of these errors were smaller in the series with alcohol, and furthermore, errors were committed for smaller intensities in these series than in the normal. This fact is important in the following respect. The numbers of relative frequency of right cases in the series with alcohol are larger than in the series without. This result may be interpreted either as indicating an increase of the sensitivity, *i. e.*, a lowering of the threshold, or by the fact that a subject who has partaken of alcohol has greater confidence in his judgment and gives judgments of difference where he ought to give judgments of equality. If the latter interpretation were right we would expect an increased number of errors in the control tests, whereas the diminution of the number of errors in the control tests proves that the threshold of sensation decreases under the influence of

alcohol. The temporal variations of the threshold were studied in the same way as in the threshold of difference. A complete correspondence was found between increase of the threshold of sensation and decrease of the threshold of difference. When the latter increases the former decreases, and both variations reach their maximum at the same time. The author's discussion of the overestimation of the second stimulus may throw some light on the nature of the Fechnerian time error. In listening to a metronome the last beat as a rule is judged to be the stronger if no special attention is paid to comparison of the stimuli, but both beats seem equal if attention is adapted to comparing the sounds. This means that our comparison of two sound stimuli without special attention shows the same shortcoming as that noticed in a subject under the influence of alcohol. There remains, however, the possibility that the field of consciousness is reduced by the influence of the drug and that the subject is not able to retain both stimuli in consciousness.

The paper of Mr. Specht is a prize essay. The study is remarkable in several respects. The most striking feature of the method employed is that the author bases his deductions merely on certain numbers of relative frequency. The study of the threshold in the strict sense of the term covers little over three pages and might have been omitted altogether without the paper becoming less convincing. This shows that the mere numbers of relative frequency obtained from different subjects are sufficient to compare the accuracy of sensations. The author does not quite get rid of the traditional way of treating the problem in so far as he uses the distinction between right and wrong cases. Correctness and incorrectness of judgments are logical categories, whereas the real judgments are that the comparison stimulus is greater or less than the standard or that the stimuli are equal. These three classes of judgments occur on a given difference of intensities with certain relative frequencies. It has been shown lately that this act is sufficient to give the foundation of the method of just perceptible stimuli, and therefore indirectly of all the psychophysical methods.

F. M. URBAN.

PHILADELPHIA.

ORGANIC SENSATIONS.

Zur Frage der Sensibilität der inneren Organe. E. MEUMANN.
Archiv für die gesamte Psychol., IX., 26-62.

*Ueber Organempfindungsträume und eine merkwürdige Traum-
erinnerung.* Ibid., 63-70.

Four series of facts are summarized by the first paper; facts obtained by surgeons, physiologists, pathologists, and those facts collected through common observation and controlled introspection. In general, experimental surgery finds that in the abdominal region the parietal peritoneum and the musculature of the diaphragm are able to mediate pain, pressure, cold and warmth by the stimuli that arouse these sensations in peripheral regions. Only the sensations mentioned are mediated and no other portions of the viscera are able to mediate sensations of any sort. Lennander, a surgeon quoted, concludes that the abdominal organs are not furnished with sensory nerves. The physiologists draw similar conclusions. Weber found that drinks of cold or warm water did not produce sensations beyond the mouth and larynx until the change in temperature had had time to penetrate to the surface of the body as tested by temperature changes at the surface. Later physiologists affirm this and some even state that the sympathetic mediates no sensations, others admit the transmission of pain by way of the rami communicantes. The results from these two fields are negative regarding inner sensations.

On the side of introspection, the writer reports some daily observations of his own, and summarizes these together with the commonly known facts, and some earlier notes by Helmholtz, to show that there are many and varied sensations that arise internally and report to us the condition of the bodily organism. Other than those usually noted, M. describes some that are made possible in his case through a particularly sensitive heart muscle. A definitely localized sensation in the region of the heart was noticed whenever any special exertion was made, this could be easily checked by the heart sounds and beats. Pathology supplements introspection and adds definite information regarding the localization of the two special groups of sensations next mentioned. In several cases observed by Sollier and Revault d'Allonnes, where the patients suffered from total anaesthesia of the digestive canal and bladder, agreeable and disagreeable states of consciousness, the feeling basis of the emotions, fear, fright, aversion, loathing, etc., and the passage of time seemed lost. Teleologically, the place for inner sensations seems plain, they are needed as warnings in order

that the organism may be capable of self preservation. There is a strange omission here of cases showing reverse phenomena.

Why are these sensations so indefinite? Helmholtz states that in the case of such organs as the vocal cords and all whose movements must be finely differentiated, the sensory reports arising therefrom are indefinitely localized. Using this analogy, Meumann suggests that the qualitative indefiniteness of the inner sensations is due to their indefinite localization. This is further due to the fact that vision and visual images do not share in their determination. 'Innere Wahrnehmung' needs beside the qualitative distinction, certain 'Anhaltspunkte,' the most important of which is visual localization.

The opposition that seems to exist between surgical observations and physiology on the one hand, and pathology and introspection on the other, is probably one of viewpoint and theoretical conclusion and not one of fact. It is possible that the inner organs are not responsive to stimuli that are adequate in the case of peripheral end-organs but do respond to physiological and pathological conditions. Head's theory of 'reflex-pains' is referred to in an addendum, and is found to substantiate the above conclusions and to furnish an anatomical and theoretical basis for the peripheral localization of many of the internal sensations. Meumann concludes that these inner organs do have sensory nerves and that introspection probably finds sensations that the surgeon is not able to arouse experimentally with his 'inadequate' stimuli. He promises a further paper in which the relation of these facts to the Lange-James theory of the emotions will be considered.

The second article is a statement of a particular set of dream-phenomena experienced by the writer at different times during the past twenty-three years. Only those dreams are given in this paper that are recurrent (*Wiederholungsträume*). Of these, three types are mentioned, a division based on the dream thema. These are 'Abgrundträume,' or falling dreams, 'Eisenbahnträume,' and 'Fliegeträume,' the second of which has repeated its theme over fifteen times. The first sort were most frequent in his high-school days, when he was especially troubled with asthma; the second accompanied the period when M. was troubled with a heart neurosis, and difficulty in breathing after any slight exertion; while the third type has appeared in the last fourteen years of his life and is both pleasant and unpleasant in tone; it being very difficult to locate the sensations that accompany the pleasurably toned, though in both it seems to be a slight dizziness that is easily recognized when the dream becomes unpleasant in tone and is usually located about the head with infrequent localization in the

region of the heart. Each theme is accompanied by the external conditions and circumstances of M.'s life.

These 'repetition' dreams are always connected with organic sensations of some kind and depend for their imagery on past experiences. In those instances where the dream is pleasurably toned the subject seems to give himself over to the dream, while in others there is a distinct sense of opposition. This sense of resistance seems bound up with the bodily reflexes, as drawing back from cliffs, compensating movements of the body when riding a swiftly moving train around a curve, etc. Constant repetition has enabled the recognition factor to appear; in cases of deep sleep following unusual fatigue this does not interrupt the dream, but in others it awakens M. In one instance the dream of the moment was mistaken for an actual experience and the thought passed through his mind that now he was *really* going through the scenes of his earlier dreams. The idea of movement carried out (*ausgeführte Bewegung*), is not obtained in the dream until the actual muscle, joint and tendon sensations arrive centrally, though the innervation phase may reach a very high pitch. One does not run in his dreams till his body actually moves. Sensations are experienced in dreams as in real life; the 'labored' heart, the 'catch' in one's breath, are not merely known upon waking, but are also memories of sensations in the dream conditions.

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DREAMS.

Interprétation de quelques rêves. ALPH. MAEDER. *Archives de Psychologie*, 1907, VI., 354-375.

Dreams are not the product of disordered mentality, but are the result of two antagonistic forces, a desire, almost always repressed, and a reproof or censure, which modifies or arrests the passage of the dream. Important phases of a dream are condensation, the fusion of unlike elements, transference of emotional interest to insignificant ideas, and dramatization or the transforming of an idea into a situation. Maeder's general standpoint is the same as that of Freud (*Die Traumdeutung*, 1900). For the most part the article is devoted to the psychological analysis and interpretation of four representative dreams, intended to illustrate the author's theory of dreams.

MABEL CLARE WILLIAMS.

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ILLUSIONS.

The Vertical-horizontal Illusion in School Children. W. H. WINCH. Brit. J. of Psychol., 1907, II., 220-225.

A gradual increase in the age of the observers from seven to fourteen years was accompanied by a gradual diminution of error. This was found true in three different schools; but, when a fourth series of exercises was given to a number of adults averaging twenty-four years, the illusion was almost as large as that of the youngest pupils, although the observers 'had received the usual education of well-to-do English people.' "It remains to be seen how far the civilized child passes through the stages of development now exemplified in the savage." "Whatever functions are operative they must be such as diminish in influence with the normal growth and progress of a school-boy."

A. C. ROBBIE.

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ANIMAL BEHAVIOR.

The Dancing Mouse, a Study in Animal Behavior. ROBERT M. YERKES. (The Animal Behavior Series, Volume I.) New York, Macmillan Co., 1907. Pp. xxi + 290.

The title of Dr. Yerkes' volume perhaps hardly prepares the reader for the real nature of the work. *The Dancing Mouse* conjures up somewhat fantastic images. The book is a thoroughly scientific study of behavior in one of the higher animals,—a work of really fundamental interest to all students of comparative psychology. The distinguishing feature of the work lies in the ingenious and extremely valuable methods of experimental investigation worked out by Yerkes; this makes the book really indispensable to every investigator in this field. At the same time the fancier of pet dancing mice will find in the book a most interesting account of the habits and other peculiarities of his pets.

The first five chapters are devoted more particularly to the special peculiarities of the dancing mouse; to its origin and history; to its extraordinary 'dance' movements; to methods of breeding and care; to the controversy that has long existed regarding the structure of the ear and the sense of hearing. With the sixth chapter, on the sense of hearing, begins the account of the author's own investigations. Yerkes shows that the mouse is deaf save for a few days in its third week of life, while his summary of the evidence indicates that no

structural peculiarities are yet known that will account for the deafness.

The most original and valuable part of the book follows, in the chapters on the sense of sight, and on the formation of habits. Dr. Bohn has somewhere said that the earlier work of Yerkes on formation of habits in lower animals 'resteront classiques, et devront servir de modèles à tous ceux qui aborderont les mêmes questions'; the same remark would certainly apply to the experimental methods described in the present work. Perhaps the most striking feature of Yerkes' special methods lies in the fact that he makes use of the educability of the animals in the study of sense physiology and in similar problems. The simple but extremely ingenious apparatus for this purpose, described in Chapter VII., should be of the greatest value to other investigators. The essential points are as follows: The animal is in a confined space, from which it seeks to escape and return to its nest. Two passages are open to it, one leading to freedom, while choice of the other results in the animal's receiving an electric shock. The 'right' and 'wrong' passages may be interchanged at will, and they may be marked differently, as by cards of different form, color, degrees of brightness, or the like. The animals are then set to learn the 'right' passageway, by choosing the 'right' signal. In this way Yerkes investigated color vision, brightness vision, Weber's law for sight, perception of form, and the like. The method, properly modified, appears to lend itself to indefinite extension, in investigating other problems and other animals. Yerkes' account of his investigations and results by this method have a really dramatic interest. Such interest is likely to evaporate when the story is condensed, so we will attempt no résumé. The original should be read.

The chapters on the formation of habits are of equal interest. Here again the development of extremely ingenious methods of investigation is described. A number of subjects not often treated experimentally in animals are here dealt with: the comparative efficiency of different ways of training; the duration of habits; memory and relearning; individual differences in behavior; the inheritance of forms of behavior; and the like. Some uncompleted experiments on the inheritance of *acquired* forms of behavior are briefly described.

The book attempts no generalizations, nor does it try to introduce new concepts or make new definitions. It is essentially a monographic treatment of certain aspects of behavior in a single animal; and even from this standpoint it is of course very incomplete, since but a small part of the field is covered. Yet it is doubtless the fullest, most satis-

factory, and most suggestive experimental account that we have of the behavior of any higher animal; and its great value lies in its inspiration for farther work. Though the book does not treat general problems explicitly, the author's experience leads him at times to well considered asides on general topics; for example the remarks on page 274, regarding the misleading nature of averages and the necessity of work with the individual, are worthy of careful note. The book is clearly written, in such a way that it can be read with understanding and interest by any intelligent person.

The question may be raised whether so thorough and fundamental an investigation might not better have been carried out on a less aberrant creature than the dancing mouse. Yerkes however is evidently of the opinion that its peculiarities give it special advantages for such work; this is of course quite possible.

This work is the first of a proposed new series of books on *Animal Behavior*, of which Dr. Yerkes is the editor. The announced second volume, on the *Animal Mind*, by Margaret Washburn, shows that the series is not to be limited to monographic accounts of experimental investigations, but is to include also books of a more general character. The volumes are published in unpretentious and inexpensive form, yet in a satisfactory way as regards print, paper, illustrations, and the like. The series should be of much value if the excellent character of the first volume is maintained.

H. S. JENNINGS.

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SOCIAL PSYCHOLOGY.

La vie sociale et l'éducation. JULES DELVAILLE. Paris, Alcan, 1907. Pp. 200.

This book is a literary exercise rather than a scientific or critical treatise. It is a comprehensive, symmetrical partition of the inter-relations of education and social life, well stocked with opposite references to modern philosophical literature, and set forth in a clear and graceful style. The whole field of education is laid out as an architect might plan a landscape garden for a noble palace: 'physical education' here, 'intellectual education' there, 'social education' in the middle, culminating in 'moral education and the philosophy of life.' It is beautiful, it is ennobling, but it marks no specific advance.

W. C. GORE.

UNIVERSITY OF CHICAGO.

La morale sexuelle. ANTOINE WYLM. Paris, Alcan, 1907. Pp. 327.

The book is mainly practical in its intention and discusses the personal and legal aspects of the sex relations. Chapters on the psychological point of view, however, give a statement of the evolution of the moral conceptions and sentiments. Three stages are brought out clearly: (1) *La morale spécifique*, the forces by which nature secures such conduct as is advantageous to the species. The forces are, in a sense, external to the individuals, hence the stage may also be called *la morale extérieure*. (2) Individual morality, which is subjective and in which the individual often opposes the welfare of the species. (3) Social morality, in which the influence of the social group is brought to bear in a way that may not accord with either the interest of the species or with that of the individual.

J. H. T.

BOOKS RECEIVED FROM FEBRUARY 5 TO MARCH 5, 1908.

The Animal Mind, a Text-book of Comparative Psychology. M. F. WASHBURN. New York, Macmillans, 1908. Pp. x + 333. \$1.60.

Report of the Commissioner of Education (for 1906). Vol. II. Washington, Government Printing Office, 1908. Pp. iv + 645-1308.

Attention. W. B. PILLSBURY. Library of Philosophy. London, Swan, Sonnenschein; New York, Macmillans, 1908. Pp. xi + 345.

Les femmes homicides. P. TARNOWSKY. With 40 plates. Paris, Alcan, 1908. Pp. viii + 590.

The Riddle of Personality. H. ADDINGTON BRUCE. New York, Moffat Yard & Co., 1908. Pp. xiii + 246.

Die Widergeburt der Philosophie. K. STUMPF. Rektor Rede, Berlin. Leipzig, Barth, 1908. Pp. 38. M. 1.

Philosophie der Werte. Grundzüge einer Weltanschauung. H. MÜNSTERBERG. Leipzig, Barth, 1908. Pp. viii + 486. M. 10.

Thought and Things or Gentile Logic. Vol. II. Experimental Logic or Genetic Theory of Thought. J. MARK BALDWIN. London, Swan, Sonnenschein; New York, Macmillans, 1908. Pp. xv + 436.

Die Elemente der Erziehungs- und Unterrichtslehre. P. BARTH. Leipzig, Barth, 1906. Pp. xii + 515. M. 7.20.

- Études d'Histoire et de Psychologie du Mysticisme.* H. DELA CROIX. Paris, Alcan, 1908.
- Abriss der Psychologie.* H. EBBINGHAUS. Leipzig, Veit, 1908. Pp. iv + 196.
- Comment former un Esprit.* DR. TOULOUSE. Paris, Hachette, 1908. Pp. x + 258.
- Ce que l'Armée peut être pour la Nation.* A. FASTREZ. Actualités Sociales, Instituts Solvay. Brussels, Misch et Thron, 1907. Pp. xiii + 294.
- National Educational Association: Journal of Proceedings and Addresses of the Forty-fifth Annual Meeting held at Los Angeles, California, July 8-12, 1907.* Winona, Minn., Published by the Association, 1907. Pp. ix + 1102.
- The Aesthetic Experience: its Nature and Function in Epistemology.* W. D. FURRY. Philos. Monograph No. 1 of the PSYCHOLOGICAL REVIEW. Baltimore, Review Publ. Co., January, 1908. Pp. xv + 155. \$1.60.

NOTES AND NEWS.

DR. R. P. ANGIER has been promoted from Instructor in Psychology to Assistant Professor at Yale University.

PROFESSOR MAX MEYER, of the University of Missouri, and Professor R. M. Ogden, of the University of Tennessee, had ready for publication last fall an English translation of Adolf Hildebrand's 'Das Problem der Form in der bildenden Kunst,' to be published by G. E. Stechert & Co., New York. In shipping from the printers to the publisher, the whole edition was lost. The book will be reprinted as soon as possible.

ACCORDING to later announcements the International Congress for Philosophy is to begin on August 31 and continue till September 5. Papers are limited to fifteen minutes each. One section of the Congress will be devoted to Psychology. Those wishing to present papers are requested to communicate with the General Secretary, Dr. Elsenhans (Plöck 79, Heidelberg).

PROFESSOR E. F. BUCHNER, of the University of Alabama, has been appointed professor of education and philosophy in the Department of Philosophy and Psychology at the Johns Hopkins University. Dr. J. B. Watson, of the University of Chicago, has been made professor of experimental and comparative psychology in the same institution. Both will enter upon their duties in September.

